Trig Final (Practice v29)
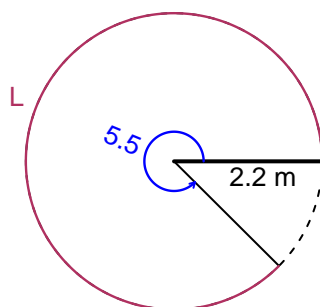
- You can use a calculator (like Desmos)
- You should have a unit-circle with special angles and coordinates marked.
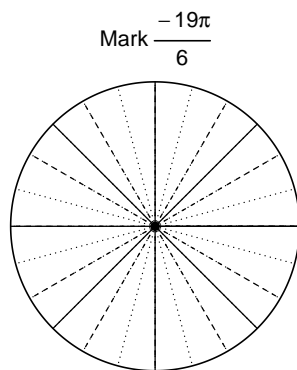
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 2.2 meters. The angle measure is 5.5 radians. How long is the arc in meters?
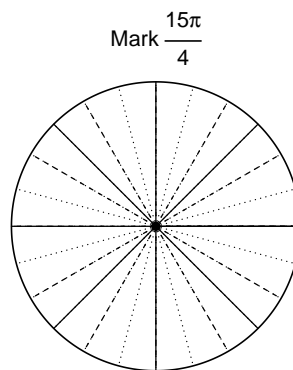

Question 2

Consider angles $\frac{-19\pi}{6}$ and $\frac{15\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{-19\pi}{6}\right)$ and $\sin\left(\frac{15\pi}{4}\right)$ by using a unit circle (provided separately).

Mark $\dfrac{-19\pi}{6}$

Find $\cos(-19\pi/6)$

Mark $\dfrac{15\pi}{4}$

Find $\sin(15\pi/4)$

Question 3

If $\sin(\theta) = \frac{60}{61}$, and θ is in quadrant II, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = -3.56$ meters, a frequency of 6.53 Hz, and an amplitude of 8.37 meters. At $t = 0$, the mass is at the midline and moving up. Write an equation to model the height (y in meters) as a function of time (t in seconds).